

# WHAT IS MANPRINT?

## Introduction

We have the greatest, most powerful Army on the planet because we have the best soldiers and leaders. In order to sustain our dominance as the world's premiere ground combat force our weapons must compliment our soldiers' abilities and aptitudes and work within the constraints of our logistics capabilities. The U.S. Army's MANPRINT (MANpower and PeRsonnel INTEgration) program is designed to ensure soldiers and units are considered whenever we upgrade or buy new systems.

## What MANPRINT does and does not do

The goal of MANPRINT is to optimize how well new systems work with soldiers in the field by including THE SOLDIER IN THE DESIGN PROCESS. Additionally, MANPRINT looks at how these new systems will impact the units once they are fielded in terms of training, maintaining, and sustaining. MANPRINT is NOT focused on creature comforts, soldier happiness, niceties, or making soldiers feel "warm and fuzzy" about themselves and their equipment. A dynamic MANPRINT program may result in improvements in these areas, but the true focus of the program is increased combat readiness.

## Soldiers, Units, Readiness and \$\$\$\$\$

The MANPRINT program is designed to ensure our soldiers and units can do their jobs with the equipment we procure for them, and to optimize use of acquisition dollars for increased combat readiness. The program was born in the mid-1980's when we spent millions of taxpayer dollars on equipment that could not always be used well in the field: The DIVAD (SGT York), and the DRAGON. The concept of the program is straightforward:

Factor our soldiers' abilities, aptitudes, and physical characteristics into the design of the equipment.

Ensure the system, once fielded, will be able to perform its assigned training and operational missions, and be reliable, maintainable, and supportable under combat conditions.

By considering these two requirements up front, in the design and procurement phase, we can avoid fielding a piece of equipment that our soldiers can't operate or maintain, and therefore, actually decreases our combat readiness. In the past, if the soldiers and units were not considered up front, the solution was to accept a greater burden on the soldiers and leaders in the field or re-design the piece of equipment (\$\$\$\$\$\$\$). Common sense demonstrates that we will achieve better readiness and it will be cheaper in the long run if we consider the soldier and post fielding burdens from the very beginning. Additionally, with continuing decreases in people and money, it is obvious we can no longer afford inefficient solutions caused by assuming that soldiers will

somehow manage to use poorly designed equipment.

## Up Front Considerations: Soldiers, Equipment, Systems and Units

The procedure used by the MANPRINT program is to examine, in detail, the seven areas listed below, while simultaneously considering how each of the areas impact on system design, operations and logistics. The cornerstone of the MANPRINT program is a select group of scientists, engineers, soldiers and civilians who are experts in determining the impact a new procurement will have in the areas listed below.

These **MANPRINT practitioners** work with system designers and program managers to ensure that soldier requirements and unit burdens are addressed at every possible opportunity.

## Areas of Concern (Domains) and MANPRINT Practitioners (Subject Matter Experts)

MANPRINT practitioners assist system designers and program managers by providing expertise in identifying potential problems and opportunities and forming appropriate recommendations. Within the MANPRINT program, the seven individual areas of concern are referred to as the "MANPRINT Domains". MANPRINT practitioners are specially trained to look at new procurements and trouble shoot potential problems.

## Areas of Concern (Domains) and MANPRINT analysis

MANPRINT practitioners examine systems as illustrated below: If you would like more information, there is a MANPRINT guidebook, which you can access through the Web: [www.manprint.army.mil](http://www.manprint.army.mil).

**Manpower:** If each new (or improved) system incrementally increases the burden on our maintainers and sustainers, we will have to either increase the number of support personnel or suffer a decrease in equipment readiness.

*MANPRINT: Look at current systems and carry good design features to the next generation. Standardize components across families of vehicles. Use soldiers in the field to test prototypes for actual maintainability. Conduct trade off analyses for increased systems reliability and costs vs. maintenance costs.*

**Personnel Capabilities:** We can build the most lethal weapon on the planet, but if it is too complicated for the average soldier to use, we have not increased our warfighting capabilities. Likewise, the acquisition of "high speed, low-drag" Automated Data Processing equipment will not increase readiness if the systems exceed the cognitive levels of the soldiers in our inventory who have to use it.

*MANPRINT:*

*Weapons: Look at current systems and carry good design features to the next generation. Use soldiers in the field to contribute job-task*

*needs and to test prototypes for ease of use.*

*ADP: Simplify and standardize software and test with actual soldiers.*

**Training:** The training burden on soldiers and units is cumulative. If a new (or improved) system increases the number of tasks a soldier must master, this correspondingly increases the training time required at the unit level. Time is a unit commander's most precious asset and therefore additional, hard to train tasks are their greatest enemy. The training burden is magnified in the National Guard and Reserve. If a system requires 60 hours of training for proficiency, a drill weekend will only allow a reserve or national guard unit, at most, familiarization. If the tasks are extremely complicated, it may be necessary to spend time conducting refresher training at the beginning of the next drill weekend.

**Human Factors Engineering:** Field equipment must usually be moved by hand by soldiers in the field: Does it require one or two soldiers to move? Does it have handles? Are the handles designed to accommodate cold weather mittens? These requirements may not be obvious during a bench test in a laboratory, but are painfully obvious to the soldiers in the field who we task to move the equipment.

**Health Hazards:** The application of biomedical knowledge and principles to the design features and operating characteristics of a material item that will eliminate, minimize, or control the potential for human performance decrement, illness, or death and result in in-

creased human and system effectiveness and combat readiness, not create any health hazard for the soldier. Adverse short or long term health effects can result in illness, reduced soldier performance, and training restrictions, which reduce weapon effectiveness and readiness.

**System Safety:** Even though being a soldier is an occupation with inherent dangers, we should not procure a piece of equipment that unnecessarily jeopardizes a soldier's physical well being, and mission performance during routine operations. Accidents hurt soldiers and degrade mission performance.

**Soldier Survivability:** The possibility of committing fratricide is a nightmare for every soldier in uniform. All new (or improved) systems must incorporate all affordable methods of reducing or eliminating the possibility of this terrible event. Additionally, to keep our soldiers alive and fighting, the systems need to be designed to be hard to detect, by the enemy and protect the soldiers when hit by fire (e.g., anti-spauling protection in tanks).

**Integration: How one area may impact another:** As with any system, where numerous pieces are interrelated, something that affects one area will probably affect another area. Therefore, the process of MANPRINT integration examines the interaction of various domains to design systems without weak points.